

REMARKS

The Office Action dated July 7, 2005, has been carefully reviewed and the foregoing amendment has been made in response thereto. Claims 1-22 are pending in the application.

In response to the rejection of claims 1-22 under obviousness-type double patenting, a terminal disclaimer in compliance with 37 CFR 1.321(c) is filed herewith. Therefore, the rejection should be withdrawn.

The rejection of claims 1-8, 11-18, 21, and 22 under 35 USC 103(a) as being unpatentable over Tateishi et al in view of Christoph is respectfully traversed. In the automatic gain control system of claims 1, 11, 21, and 22, when decision logic decides that a second component of an audio signal corresponds to an undesirable transient signal, a control signal generating circuit generates an automatic gain control signal so as to gracefully set the gain of a loudspeaker to zero for fade-out of a reproduced voice. Consequently, neither the transient noise (i.e., a short duration, high amplitude noise impulse) nor the spoken voice will be reproduced after the fade out. This is in contrast to continuous background noise which can be filtered out and which does not prevent the reproduced voice from being output.

In contrast, Tateishi continuously attempts to generate a restored speech signal by removing interfering noises. The only discussion of a transient in Tateishi is at column 2, lines 30-42, where it is stated that transient noise can be removed by a neural network. Both this mentioned prior art and the other teachings of Tateishi are directed to estimating a speech signal for continuous output by removing noise (whether transient or otherwise). Not only is there no mechanism shown in Tateishi to fade-out or fade-in a reproduced voice signal, but there would be no reason to perform any fades at all since the estimation of the speech signal is continuous. Therefore, at a minimum, Tateishi fails to teach or suggest a control signal generating circuit for generating an automatic gain control signal in response to a decision that transient noise exists.

Moreover, Tateishi does not utilize any gain control modifications in

response to noise or any other parameter. The word “gain” appears only three times in Tateishi, and none of the occurrences relate to amplification of a signal. Further, since Tateishi extracts the speech signal from any noise, it does not appear that performance could even be improved by adding any gain control.

The gain control of Christoph fails to strengthen the rejection. Christoph relates to an automotive audio system for reproducing music. Its microphone is for the purpose of measuring the combined sound of the audio system (e.g., CD player) and ambient noise so that the music volume can be increased when excessive noise is present. Thus, Christoph would never automatically fade out the gain to zero. Instead, it provides a boost in gain when excessive noise is detected. This runs counter to the claimed invention which depends upon fading out of the reproduced voice when a transient noise occurs.

Christoph only reproduces a music signal from the audio source and does not reproduce the microphone signals. Therefore, there would be no motivation to combine the teachings of Christoph with Tateishi. Christoph increases the sound volume from the loudspeakers in order to mask noises (which is why Christoph would also utilize the vehicle speed in its calculations). Increasing sound volume in proportion to the presence of noise would worsen the performance of Tateishi since the reproduced noises would be increasingly amplified.

Since Tateishi and Christoph fail to teach or suggest the above noted limitations and there would be no motivation to combine them, independent claims 1, 11, 21, and 22 are allowable over the cited references. Dependent claims 2-8 and 12-18 are allowable for the same reasons.

The rejection of claims 9, 10, 19, and 20 under 35 USC 103(a) as being unpatentable over Tateishi as modified by Christoph and further in view of Nishiguchi is respectfully traversed. Nishiguchi fails to either teach or suggest the modification of a gain in response to noise. Therefore, it fails to correct for the deficiencies of the base rejection, and claims 9, 10, 19, and 20 are likewise allowable.

In view of the foregoing amendment and remarks, claims 1-22 are now in condition for allowance. Favorable action is respectfully solicited.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Mark L. Mollon", is written over a horizontal line.

Mark L. Mollon
Attorney for Applicant(s)
Reg. No. 31,123

Dated: September 19, 2005
MacMillan, Sobanski & Todd, LLC
One Maritime Plaza, Fourth Floor
720 Water Street
Toledo, Ohio 43604
(734) 542-0900
(734) 542-9569 (fax)